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ABSTRACT

The purpose of this multi-year project was to develop a delivery system for adult education through expanded outreach opportunities using computer-assisted instruction (CAI) and computer-managed instruction (CMI) for undereducated adults in a home-based context. In phase 1 of the three-year project, planning, development, and testing of CAI in a traditional adult education part-time setting was conducted in Lafayette Parish, Louisiana. During phase 2, this experience was continued and the classes expanded to two sites. A selected class emphasizing CAI was conducted during phase 3 along with a component in four to six homes. In all phases a regularly available CAI hardware system was coupled with an adult basic education curriculum available from Computer Curriculum Corporation. A curriculum coordinator and an aide were employed to conduct the CAI sessions and to prepare a curriculum guide that would coordinate the CAI curriculum with usual adult education instructional materials. Results of the experiment indicated that the CAI students showed slightly higher progress than non-CAI students in academic growth. Therefore, it was concluded that the use of CAI and CMI could be beneficial to undereducated adults, both in class and in the home, with the assistance of adult education teachers. Because of certain limiting factors, the use of a microcomputer with the curriculum developed for this project might be more feasible for extending adult education services into homes. (KC)

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HOMEBASED COMPUTER ASSISTED ADULT EDUCATION PROJECT - PHASE III FINAL PROJECT REPORT

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The University of Southwestern Louisiana
Lafayette, Louisiana

State Board of Elementary and Secondary Education Grant
Special Project ABE-3-83
September 1, 1982, through August 31, 1983

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HOMEBASED COMPUTER ASSISTED ADULT EDUCATION PROJECT - PHASE III
September 1, 1982, through August 31, 1983
Final Project Report

ABSTRACT

Purpose

The purpose of the multi-year project was to develop a delivery system for adult education through expanded outreach opportunities utilizing contemporary educational technology. The appropriateness and feasibility of computer assisted instruction (CAI) and computer managed instruction (CMI) for undereducated adults in a homebased context was to be determined. The project was to accomplish the following objectives:

1. Development of a homebased computer assisted instruction delivery system for use with undereducated adults.
2. Preparation of a curriculum guide for instructors which will correlate the computer program lesson material with commonly available resource material in adult education programs in Louisiana.
3. Determination of the effectiveness of computer assisted instruction in a normal adult education context.
4. Field testing of the homebased computer assisted instruction delivery system developed in the first objective.

Procedure

The special experimental demonstration project was conducted by the University of Southwestern Louisiana in cooperation with the Lafayette Parish Adult Education Program and the E.S.E.A. Title I Project. The project conducted the following program in order to accomplish project objectives. This report provides information for Phases I and II (1980-82) and, or, Phase III (1982-83) and, or, for all three phases (1980-83).

In Phase I of the three year project, planning, development, and testing of computer assisted instruction in a traditional adult education part-time setting was conducted. The project capitalized on the availability of computer facilities and the curriculum programs in the Title I Project at little or no cost. During Phase II this experience was continued and the classes expanded to two sites. A selected class, emphasizing CAI, was conducted during Phase III along with a limited homebased component.

In all phases a regularly available computer assisted instruction (CAI) hardware system was coupled with an ABE/GED curriculum available from Computer Curriculum Corporation, Palo Alto, California, to provide CAI on a supplementary basis to students enrolled in an adult education program. A curriculum coordinator and usually one aide were employed to conduct the CAI sessions and prepare a curriculum guide which would correlate the ABE/GED curriculum with normally available adult education instructional materials. The guide was intended to assist adult

education instructors in teaching concepts for which controlled drill and practice is provided by CCC's CAI curriculum.

During Phases I and II of the project emphasis was placed on determining the feasibility of using CCC's computer system with undereducated adults, determining the effectiveness of the ABE/GED curriculum, and preparing a revised curriculum guide. Effectiveness was determined by comparing grade equivalence score elevations between "CAI students" and "non-CAI students" in Lafayette Parish and the State. During Phase III a regular CAI supported class was conducted and a homebased CAI component was field tested.

Results and Conclusions

During Phase III the adult education students (17) received computer assisted instruction during 49, two and one-half hour sessions in the fall, 1982, and spring, 1983. Adult students manipulated the computer hardware as they studied the ABE/GED curriculum materials. The average grade equivalence elevation score for the "CAI students" was 1.7 over an average attendance period of 71.8 hours. The "CAI student" average was extrapolated in order to make it comparable to average attendance hours for "non-CAI students" in Lafayette Parish and the State. The extrapolated average score for the "CAI students" was 1.6 which was .2 greater than the "non-CAI student" score in Lafayette Parish of 1.4. In a similar manner the extrapolated score for comparative purposes on a statewide basis was 1.8 for the "CAI students" and 1.7 for "non-CAI students", again a higher

elevation for the "CAI students" of .1.

During Phase III CAI services were extended to a limited number of individual home sites (4 to 6) of adult education students. The students were able to manipulate the CAI equipment and were enthusiastic about instruction being available on a virtually continuous basis via telephone lines and an acoustical coupler. However, the homebased equipment posed some minor logistical problems for the staff.

A preliminary draft of a curriculum guide was prepared during initial phases of the project. In the latter phases the guide was revised and field tested.

It was concluded that undereducated adults can (and do) manipulate a computer assisted adult education system of the type marketed by Computer Curriculum Corporation. The respective ABE/GED curriculum seems appropriate for use with undereducated adults since the academic growth for "CAI students" generally equaled or exceeded that of "non-CAI students". Experience with CAI and CMI during the first two phases of the project assured the staff's confidence of the potential for enhancing adult education services when these services are coupled with the regularly available adult education teacher and materials.

The limited homebased component extended CAI and CMI to home sites. While statistical differences in achievement test scores were not determined in the project enough experience was gained to believe that adult education students could benefit from homebased CAI with the assistance of an adult education teacher.

Due to certain limiting factors it may be that the CCC curriculum coupled with a microcomputer would be more feasible for extending adult education services to individual homes of regular or special adult education students.

HOMEBASED COMPUTER ASSISTED ADULT EDUCATION PROJECT - PHASE III

September 1, 1982, through August 31, 1983

Final Project Report

I. BRIEF DESCRIPTION OF THE PROJECT

During a three year period from 1980 to 1983, the University of Southwestern Louisiana sponsored an experimental demonstration project which attempted to expand and improve the existing adult education delivery system. In a multi-year, multi-agency endeavor the University studied the feasibility of applying computer assisted instruction (CAI) and computer managed instruction (CMI) to adult education. The ultimate goal of the project was to investigate the use of CAI and CMI in a homebased context.

During Phase I (1980-1981) a CAI and CMI delivery system was selected and tested with a regular class of adult education students. The CAI program supplemented regular ABE/GED instruction with intensive drill and practice exercises. A curriculum guide which correlated the CAI curriculum to conventional adult education materials was also developed during Phase I. The curriculum guide would assist adult education teachers in correlating their programs with the CAI and CMI programs.

Since Phase I provided only initial experiences with the

computer assisted instructional program and its accompanying computer managed instruction program it was decided that more experience was needed with the programs. The curriculum guide had been prepared in a rough draft edition and needed to be revised and enhanced for better correlation with adult education materials. Homebased equipment was not yet available from the contractor who provided the computer hardware and software. For these reasons Phase II addressed increased CAI and CMI experiences (including an additional remote site) and significant expansion and revision of the curriculum guide.

During Phase II (1981-82) the multi-agency project again pooled resources from the Lafayette Parish Adult Education Program, the Lafayette Parish E.S.E.A. Title I Project, and the College of Education at USL. The Lafayette Parish Adult Education Program established and conducted two normal part-time classes and the E.S.E.A. Title I Project provided computer equipment and facilities. The grantee University provided the technical expertise and leadership for program development. Participants were selected from the adults attending the part-time adult education classes.

Phase III (1982-83) addressed the ultimate goal of the project. Plans were implemented to test CAI in a homebased context. Since this type of venture was basically untested a relatively low-cost modest program was prepared for providing homebased CAI to adults utilizing remote terminals, modems and a mainframe computer. Four home sites were to be selected for

participation in this phase of the project.

II. PROGRAM OBJECTIVES AND EVALUATION PLAN

The purpose of the three-year project was to accomplish the following objectives:

Objective 1 Development of a homebased computer assisted instruction delivery system for use with undereducated adults.

Objective 2 Preparation of a curriculum guide for instructors which will correlate the computer program lesson material with commonly available resource material in adult education programs in Louisiana.

Objective 3 Determination of the effectiveness of computer assisted instruction in a normal adult education context.

Objective 4 Field testing of the homebased computer assisted instruction delivery system developed in the first objective.

In order to evaluate the effectiveness of the project, the following procedures were established and the project director was to prepare the final summary report. The plan of evaluation for each of the preceding objectives is listed below.

Objectives 1 and 2 were to be evaluated via professional judgment of the quality of the delivery system and curriculum guide developed. Since the system and the guide were to be used in Phase III of the project their adequacy (effectiveness) could not be determined until the completion of these two phases.

Basically, the development of a delivery system and a revised curriculum guide will constitute the successful accomplishment of Objectives 1 and 2.

Objective 3 was to be evaluated by comparing the performance of the adult education students enrolled in the computer assisted instruction program with regular adult education students in Lafayette Parish and in the State. Measures conventionally collected from regular adult education students were to be determined for the students involved in the project (a common measure is grade-equivalence). Equal or greater performance by the students in the project was to constitute successful accomplishment of Objective 3. Supplemental data relative to Objective 3 was to be obtained via a special questionnaire. The questionnaire was to determine the affective disposition of students toward CAI and also to solicit suggestions for implementing CAI with adults.

Objective 4 was originally to be evaluated during Phase II of the project but was shifted to Phase III. Objectives 1, 2 and 3 were partially tested during Phases I and II. During Phase III, Objective 4 was to be conducted on a limited basis and Objectives 1, 2 and 3 were to be continually tested with a regular part-time adult education class. Evaluation of Objectives 1, 2, 3 and 4 was to be done during Phase III.

During Phase III, Objectives 1 through 4 were to be evaluated as follows. Objective 1 will be evaluated via the judgment of the project staff through their CAI and CMI

experiences with adults in a regular class and in a homebased context. Objective 1 has been previously tentatively evaluated and activities during Phase III will supplement that information.

Objective 2 will also be evaluated during Phase III. The curriculum guide has been prepared in rough draft form and revised. The staff will utilize the guide during Phase III operations and will use its professional judgment in determining the appropriateness of the reference.

Objectives 3 and 4 will be evaluated by comparing the performances of the adult education students enrolled in the computer assisted program with regular adult education students in Lafayette Parish and in the State. Measures conventionally collected from regular adult education students will also be determined for the students involved in the project. A common measure collected is grade equivalence from the California Achievement Test. Equal or greater performance by the students in the project will constitute successful accomplishment of Objectives 3 and 4.

Especially for Objective 4, homebased participants will be asked to share their CAI experiences as they might reflect on more general use of CAI in home sites. The homebased component is considered a feasibility study to gain initial experiences with the use of CAI in home sites of adult education students. For that reason it is difficult to predetermine precise evaluation procedures.

A special questionnaire will be administered to project

participants. The questionnaire will attempt to determine the affective disposition of the students toward CAI and also solicit suggestions for implementing CAI with adults either on a class basis or in a homebased context.

III. METHODOLOGY

The proposed three-year project provided the opportunity to study the ultimate development of a delivery system for providing adult education (ABE and GED) on a homebased (homebound) basis employing currently available and developing technology in the field of computer assisted instruction (CAI) and computer managed instruction (CMI). The approach was to emphasize the use of adult educators (and conventionally available adult education materials) for instructional purposes, complemented by computer resources with accompanying programs to assist the instructor in providing and managing the learning experiences of the adult student. In the end the feasibility (pilot and demonstrate) of using computer technology with various types of adult education students on a homebound basis with minimal class attendance or completely homebased with the services of a roving teacher was to be determined.

The computer technology and curriculum of the Computer Curriculum Corporation, Palo Alto, California, was used in the study. The regional representative of CCC serving the project was Southern Educational Media, Inc., Pearl, Mississippi. The Adult Basic Education curriculum of CCC was entitled Adult Skills Courses and consisted of four courses: Adult Reading Skills,

Adult Language Skills 1, Adult Language Skills 2, and Adult Arithmetic Skills. The General Educational Development curriculum was included in Textbook for the GED Curriculum and covered the topics English, Social Science, Natural Science, Literature and Mathematics.

The project was to extend from October 1, 1980, through September 30, 1983, but a change in funding period dates changed the ending date to August 31, 1983. The three-year program was divided into three Phases: Phase I, Phase II, and Phase III.

During Phases I and II pre-homebased planning and piloting activities were conducted with three part-time classes of ABE and GED adult education students. This was done in order to determine the appropriateness and applicability of computer assisted instruction for use with undereducated adults, including the development of a curriculum guide for the CCC CAI curriculum for adults. In order to minimize costs and maximize the use of existing facilities and programs, project activities were coordinated with the Lafayette Parish School System's Adult Education Program and E.S.E.A. Title I Project. The Adult Education Program established and conducted normal, part-time adult education classes at Carencro Elementary School and Lafayette Elementary School (one class during Phase II) for five hours per week, providing teachers, one aide, materials, and administrative support. The classes met from 5:30 pm to 8:00 pm on Tuesdays and Thursdays. Students were selected from the adult education classes to receive computer assisted instruction in the

Title I lab facilities at each site. Approximately 20 to 50 students were to be enrolled each year.

The Title I program provided computer facilities and terminals at no cost to the project. The additional adult education curriculum from CCC was acquired on a rental basis. Additional remote terminals and modems were rented for the homebased component. The main computer facilities were located on the campus at Carencro Elementary School (along with facilities for the regular meetings of the normal part-time adult education classes). One remote class site (with phone line connections) was at Lafayette Elementary School during Phase II only.

Plans were made for each student to receive an average of one-half hour per evening (twice a week, for eight months of the project) of computer assisted instruction via the computer facilities available in the Title I labs. In addition to the software the computer facilities at Carencro Elementary School consisted of eight video monitors with key boards, a central data processing unit, and printer. The Lafayette Elementary School site contained eight similar video monitors and a printer.

Coordination of the "computer curriculum" and conventional adult education materials was continued during Phase II. A curriculum specialist or coordinator was employed by the project to determine which adult education materials were best to use to instruct students who are working with the CCC's computer assisted instruction program, and review the appropriateness of

the computer managed instruction component in the program. The curriculum guide was revised and expanded to improve its potential as a resource manual for use in implementing computer assisted instruction in other adult education programs. A consultant was employed to assist with some activities of Phase II such as the preparation of selected sections of the curriculum guide.

During Phase III the project continued to utilize the technology and curriculum of the Computer Curriculum Corporation, Palo Alto, California. The regional representative of CCC servicing the project was Southern Educational Media, Inc., Pearl, Mississippi. CCC provided the computer capacity, accompanying hardware and software, and consultative resources for operating the computer assisted instruction programs. The Adult Basic Education curriculum of CCC was entitled Adult Skills Courses and consisted of four courses: Adult Reading Skills, Adult Language Skills 1, Adult Language Skills 2, and Adult Arithmetic Skills. The General Educational Development curriculum was included in Textbook for the GED Curriculum and covers the topics English, Social Science, Natural Science, Literature, and Mathematics.

During Phase III plans were implemented to test CAI in a homebased context. Additional computer hardware was leased from CCC in order to extend CAI and CMI to home sites selected for ABE/GED instruction. Since this was a venture which was as yet largely untested with adults using remote terminals, modems and a

mainframe computer, the homebased component of Phase III was a relatively low-cost, modest undertaking. Four home sites with the necessary equipment to accommodate homebased CAI were to be established and tested for approximately four months. The home sites were selected by the project director. This special equipment was leased for six months and allowing time for initial "start-up", the actual instructional time at the home sites was to be at least four months.

The home site CAI/CMI component provided ABE/GED instruction to adult education students on a variable individualized basis. Many adults have difficulty attending regular adult education classes due to "time conflicts". In order to overcome this significant limitation CAI was to be available virtually at any time of the day or night, every day. However, in order to minimize costs CAI was not available while the Title I students were using the computer resources. That was on school days between 7:30 AM and 3:30 PM. On all other days, including weekends and holidays, CAI was available through automated equipment during part of the six months dedicated to this part of the project.

A regular adult education class was also conducted at Carencro Elementary School during Phase III in a manner similar to Phases I and II. The class served as an orientation site for the adult students selected for homebased instruction and as a site which they could occasionally visit for tutoring. Since the software was required for the home sites it was possible to also

use it for other purposes at no additional cost. This regular adult education class was exclusively dedicated to intensive CAI instruction at the ABE/GED level. The class was classified as one of the classes in the Lafayette Parish Adult Education Program. Adult students enrolled in this class were required to make a commitment to working with the CAI program in conjunction with regular adult education materials (aided by the curriculum guide). It was expected that approximately 20 students would be enrolled in the regular adult education class. A curriculum coordinator conducted the regular class and also coordinated and monitored home site CAI operations. He was supported by a laboratory assistant who operated the computer and terminals and tutored adult students. The Lafayette Parish Adult Education Program provided administrative support for the class.

The staff continued studying the appropriateness and applicability of computer assisted instruction for use with adult education students, including remote home sites. In order to minimize costs and maximize the use of existing facilities and programs, project activities were coordinated with the Lafayette Parish School System's Adult Education Program and E.S.E.A. Title I Project. The Adult Education Program established a part-time adult education class at Carencro Elementary School for five hours per week in order to accommodate those students not enrolling in the CAI program. Administratively the two groups were combined for reporting purposes to the Bureau of Adult and Community Education.

Normally available data such as California Achievement Test grade-equivalence scores were collected and comparisons were made with the parish and statewide scores for non-CAI classes and students. This was done in order to determine the potential value of computer assisted instruction in regular part-time and full-time adult education classes.

Adult education students were to dedicate an average of one-half to one hour per evening, twice a week, for six to eight months, to the computer assisted instruction curriculum available through the terminal facilities in the E.S.E.A. Title I lab. During that time the curriculum guide was to be field tested and revised (if needed).

Phase III of the project was divided into three major parts in terms of a time schedule.

a. September 1, 1982, to September 30, 1982 - initiating activities, inservice for staff and acquisition of adult education curriculum materials and home site equipment.

b. October 1, 1982, to May 19, 1983 - computer assisted instruction with adult education students in the part-time class and including four to six months of home site instruction.

c. May 20, 1983, through August 31, 1983 - accumulation of information and data, revising and editing the curriculum guide, evaluation activities, preparation of the Phase IV proposal, and preparation of the final project report.

IV. ASSESSMENT OF ACCOMPLISHMENT OF OBJECTIVES

In the design of the proposal deliberate plans were made for evaluating each of the project's objectives. The results of the evaluation activities are summarized in this section.

Objective 1 Development of a homebased computer assisted instruction delivery system for use with undereducated adults.

Objective 2 Preparation of a curriculum guide for instructors which will correlate the computer program lesson material with commonly available resource material in adult education programs in Louisiana.

Evaluation Plan for Objectives 1 and 2 (combined) Evaluation of the delivery system and curriculum guide was to be done via professional judgment. Since the system was projected for application in Phase III of the project their adequacy (effectiveness) could not be determined until completion of Phase III.

Assessment of Objectives 1 and 2

Basically, the continued experience with a delivery system and the revision of the curriculum guide constituted the successful accomplishment of Objectives 1 and 2. At the end of Phase I of the project a delivery system which could be placed in a home environment and joined to a control center (manned by an adult education teacher) was studied. The technology for accomplishing this currently exists but was not then available from the publisher and provider of the hardware resources, except at high cost. Hence, a terminal (cathode ray tube) and central

processor (with adult education curricula) were used in a centralized location. Exclusive of the appropriateness of curriculum, a delivery system providing computer assisted instruction to adults, along with a computer managed instruction component, was in place and operating at the end of the instructional sessions of Phase I of the project (May, 1981). This experience was continued and expanded to two sites in Phase II and introduced to home sites during Phase III.

Study by the staff of the adult education project of the curriculum leased specifically to provide computer assisted instruction seemed to be appropriate for adults. Lesson materials were adult oriented and did not seem to be psychologically offending to adults by including "childish" material. The adult age level in the classes was relatively low and hence material which might be appropriate for middle and late teens was useful in the project. During all phases very few enrollees were beyond 25 years of age.

A rough preliminary draft of a curriculum guide had been prepared during Phase I. During Phases II and III the guide was revised. Additional sections were prepared by a selected consultant with experience in adult education instruction. The guide is presented in Appendix B.

The curriculum guide was used in conjunction with the CAI curriculum in both the formal classes and the home site instruction. The guide was an excellent source of information for guiding adult students in their academic studies. The

exercises referenced in the guide provided another form of study, and drill and practice in areas correlated to the CAI lesson topics.

Especially in the formal class a deliberate effort was made to supplement the CAI activities with the conventionally available adult education materials. Assignments or suggestions for home study were made. Teachers "followed-up" on the assignments either by checking students work or providing tutoring services when appropriate. Unfortunately, some students did not complete assignments and relied only on class meeting activities.

Objective 3 Determination of the effectiveness of computer assisted instruction in a normal adult education context.

Evaluation Plan for Objective 3 Objective 3 was to be evaluated by comparing the performances of the adult education students enrolled in the computer assisted instruction program with regular adult education students in Lafayette Parish and in the State. Measures conventionally collected from regular adult education students were to be determined for the students involved in the project (a common measure is grade equivalence). Equal or greater performance by the students in the project was to constitute successful accomplishment of Objective 3. A special questionnaire to determine the affective disposition of students toward CAI was to be administered to participants. Their suggestions toward implementing CAI with adults will

be solicited in the form of "likes and dislikes" of CAI, and free response type items.

Assessment of Objective 3

The project provided computer assisted instruction in Phases I, II and III during class meetings on Tuesdays and Thursdays for two and one-half hours per session. Classes were held at Carencro Elementary School during all three phases and at Lafayette Elementary School during Phase II. The curriculum coordinator and the lab assistant provided instructional services which complemented the CAI program.

Objective 3 was evaluated during Phases I and II and the findings have been presented in the respective project reports. The findings presented in this section pertain largely to operations during Phase III, but, where appropriate, some findings from Phases I and II will also be included in the data.

Phase III operations were somewhat delayed by funding commitments made after the targeted beginning date of September 1, 1982. Phase III activities were initiated on October 8, 1982, when notification of project approval was received and final funding negotiations were completed. Hence, rather than beginning CAI instruction on October 1, 1982, the class began meeting on October 19, 1982, in the Carencro Elementary School Title I math lab. The homebased instruction was delayed due to late funding, and technical and other problems in getting the system established.

Data for the part-time class will be reported first and

homebased CAI findings will follow. Most of the homebased data is included in the evaluation of Objective 4.

Computer assisted instruction was conducted from October 19, 1982, through May 19, 1983. As planned, students enrolled in the regularly established part-time adult education classes. Then, project participants were selected to be transferred to the CAI class in order to receive intensive computer assisted instruction at either the ABE or GED level. The CAI activities were supplemented by individual instruction using materials identified in the Curriculum Guide prepared during Phases I and II of the project.

During that time 53 CAI sessions of two and one-half hours each were held. CAI was not possible on four occasions. Technical difficulties with the computer were the problem on three occasions and storm related damage was the other problem. Therefore, students were provided CAI instruction on 49 occasions. When the computer was "down" class meetings using adult education materials were held. In Phase III the adult students remained in the CAI classroom during all meetings, rather than participating on a partial basis as in Phases I and II.

A total of 19 persons enrolled in the CAI class. Some of these students transferred later during the year into the homebased phase.

In order to establish a minimum level of participation, substantial CAI services was operationally defined as working in

the CAI curriculum for at least 90 minutes. On that basis 17 students received substantial CAI services (excluding one homebased student). Average class attendance for these 17 students was 67.5 percent. One student enrolled in the CAI class during the last few weeks of the program and accumulated more than 90 minutes of CAI time but the student was not pre-post tested with the California Achievement Test and was not included in the above number. The goal of the project during Phase III was to serve 20 students. Including the student who was not officially enrolled in the program the project served exactly 20 students. A summary of student enrollment is presented in Table 1.

The average computer time for the 17 students receiving at least 90 minutes of CAI in class was 15 hours and 24 minutes. The minimum time was 175 minutes and one student had approximately 44 hours of computer time. Since some students also transferred to the homebased program their total respective CAI times were greater than the amounts referenced above and are reported separately with the homebased data.

The average actual computer time for students by curriculum areas was as follows.

AAS - 6 hours, 19 minutes

ARS - 4 hours, 1 minute

ALS 1 - 2 hours, 32 minutes

ALS 2 - 2 hours, 59 minutes

GED - 0 hours, 46 minutes

The number of students completing programs of study ("topping out") in defined curriculum areas are listed below.

Curriculum	Number
AAS	1
ARS	7
ALS 1	7
ALS 2	4
GED	N/A

The GED number is given as not applicable since the GED curriculum is structured differently from the other curriculum areas. Completion of the GED curriculum is not interpreted in the same manner as the curriculum areas in Adult Basic Education.

Pre-post testing with the California Achievement Test was again the basis for determining the effectiveness of the CAI program. Seventeen (17) students were available for pre-post testing with the CAT.

TABLE I

SUMMARY OF STUDENT ENROLLMENT
IN THE CAI CLASS

	Enrolled in CAI Program	Received at Least 90 minutes of CAI
ABE	13	12
GED	6	5
TOTAL	19	17

The grade elevated scores of the students participating in the CAI program were compared to other non-CAI adult education students in Lafayette Parish and the state of Louisiana. The Lafayette Parish and State statistics were for the most recently available period, 1982.

The average grade elevated score for the 17 students enrolled in the CAI class (with at least 90 minutes of computer time) was 1.7 with 71.8 hours of average total attendance. The grade elevated average score for Lafayette Parish non-CAI students was 1.4 with 66.0 hours of average total attendance. The figure for the State was 1.7 with 75.4 hours of average total attendance. In order to compare the CAI grade elevated scores to the non-CAI Lafayette Parish score, the scores were made comparable (using average time attended) by an extrapolation procedure. On that basis the CAI program average grade elevated score was 1.6 (with the Lafayette Parish score remaining at 1.4).

When the extrapolation was applied to the CAI group and the State group the following resulted. The CAI average grade elevated score was 1.8 (with the State score remaining at 1.7). The grade elevated scores are summarized in Figures 1 and 2 (including Phase I and II results).

FIGURE 1

AVERAGE GRADE EQUIVALENCE ELEVATION SCORES FOR
LAFAYETTE PARISH ADULT EDUCATION STUDENTS
AND CAI STUDENTS (EXTRAPOLATED)

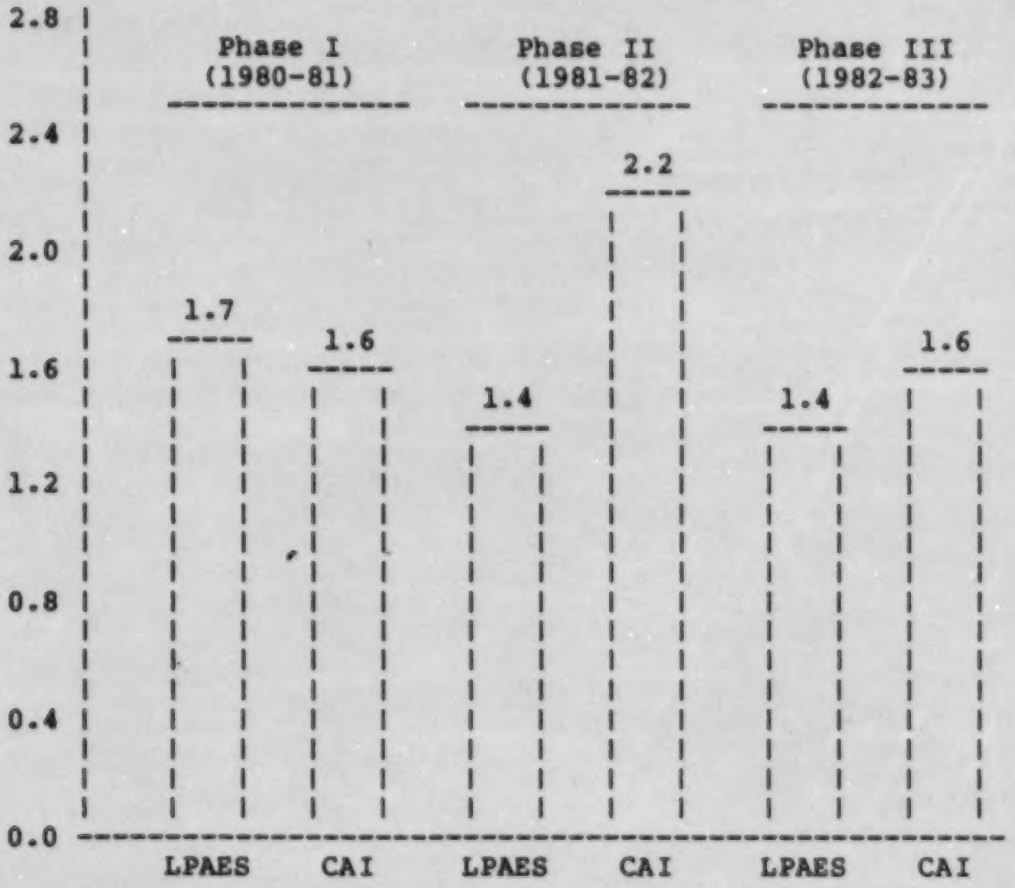
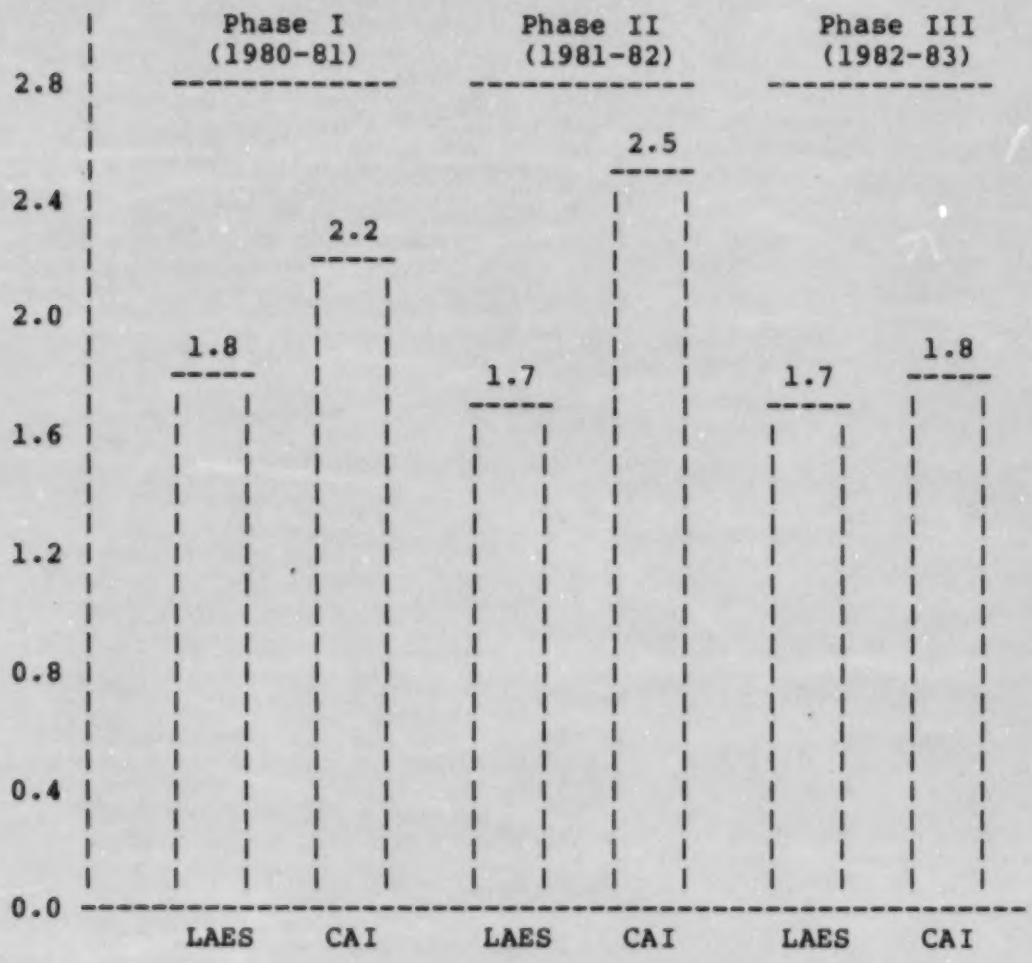


FIGURE 2

AVERAGE GRADE EQUIVALENCE ELEVATION SCORES
FOR LOUISIANA ADULT EDUCATION STUDENTS
AND CAI STUDENTS (EXTRAPOLATED)



The difference between the CAI average grade elevated score and the non-CAI average grade elevated scores for Lafayette Parish and the State was not as large as the difference during Phase II. The difference between the CAI score and the Lafayette Parish score was .2 (1.6 - 1.4 = .2) and the difference between the CAI score and the State score was .1 (1.8 - 1.7 = .1). The difference of .2 and .1 are probably too small to be noted as very significant. As previously stated in the prior final project reports the establishment of statistical significance is difficult due to necessary design and procedures. However, the difference between the grade elevated scores is again greater during the third phase of the project. Hence it was felt that CAI may be an effective instructional supplement in regular adult education programs based on pre-post test analyses.

Efforts were also made during Phase III to determine the affective disposition of students towards CAI. The attitudes of the adult education students who had received substantial services were measured using the "Revised Brown Scale". The scale, modified (for preparing a Master's thesis by Mrs. Ann Justice, an adult education teacher) to measure attitudes of adult education students toward CAI, was administered to 16 participants in the CAI project (for both the class and the homebased). Each had logged a minimum of 90 minutes in CAI. One student who completed at least 90 minutes of CAI was not available to respond to the questionnaire. Responses to the Scale includes responses by both, students in the class and those

homebased (except for items 34 through 36 which apply only to homebased students).

The "Revised Brown Scale" consisted of thirty comments concerning attitudes towards CAI, one question on what is most liked about CAI, one question on what is most disliked about CAI, and one question soliciting suggestions for CAI in adult education. Three items (34 - 36) measured the attitudes of students who received homebased CAI services. A copy of the scale is in Appendix A.

Responses to each attitude comment were made by circling one of five "feelings" towards CAI. The five choices, in order, were: Strongly Disagree; Disagree; Undecided; Agree; and, Strongly Agree.

The tallied responses by students are summarized in Table 2. Four students omitted a total of five items (13, 18, 20, 21, 30).

The questionnaire was scored by assigning values one through five to the five responses per item, with the highest score (5) assigned to positive responses. For some items, agreement with the statement indicates a positive attitude; for others disagreement indicates a positive attitude. The most positive attitude was assigned a score of five points; the least positive, a score of one point; and, a neutral response a score of three points. The scores were summed for the group to determine the degree of overall positive, neutral, or negative attitude.

TABLE 2

SUMMARY OF RESPONSES BY PROJECT PARTICIPANTS TO THE "REVISED BROWN SCALE"

ITEM	SD	D	U	A	SA	ITEM	SD	D	U	A	SA
1	1	0	0	7	8	16	5	9	0	0	0
2	6	7	0	2	1	17	10	5	0	0	0
3	5	5	0	3	2	18	3	9	1	2	0
4	7	7	0	2	0	19	0	1	0	11	4
5	5	8	1	2	0	20	6	7	1	1	0
6	8	6	0	2	0	21	3	8	1	3	0
7	2	5	3	6	0	22	6	8	0	1	0
8	7	5	0	3	0	23	0	0	0	6	9
9	1	8	2	2	2	24	0	0	0	11	5
10	0	0	1	8	5	25	0	0	1	9	6
11	3	3	5	4	0	26	8	7	1	0	0
12	0	1	0	8	6	27	10	5	0	0	0
13	4	7	1	3	0	28	5	9	1	0	0
14	1	0	1	8	5	29	5	6	2	2	0
15	0	1	0	9	4	30	5	5	2	2	1

NOTE: SD - Strongly Disagree
D - Disagree
U - Undecided
A - Agree
SA - Strongly Agree

On the 30 item questionnaire measuring attitudes toward computer assisted instruction, theoretically for each individual a neutral attitude would be represented by a score of 90 (3 X 30), and the possible extreme scores would be 30 (1 X 30) expressing a negative attitude, and 150 (5 X 30) expressing a positive attitude. An overall possible score was determined for the 16 students responding to the questionnaire, with seventeen items adjusted for only 15 responses and three adjusted for only 14 responses. A "perfect" overall positive attitude would be a total score of 2,285; a "perfect" neutral attitude would be a total score of 1,371; and, a "perfect" negative attitude would be a score of 457.

The overall total score was 1,861. When compared to the "perfect" positive score of 2,285 and the "perfect" neutral score of 1,371, it was apparent that the students expressed very positive attitudes towards CAI. Calculation of a "perfect" agree score yields a value of 1,828. Therefore, since the overall total score was 1,861 (which is greater than 1,828) the students expressed attitudes which were equivalent to a minimum of at least an agreement level.

Results from the survey using the "Revised Brown Scale" can be summarized by stating that students generally:

Could do their best work with CAI.

Wanted to find out more about the subject.

Could work at their own speed.

Felt as though they had a private tutor with CAI.

Felt that the material was chosen especially for him or her.

Felt that CAI made it possible to learn quickly.

Were satisfied with what they learned.

Thought that CAI is better than other kinds of instruction.

Would prefer CAI over other forms of instruction in adult education.

Thought CAI was flexible.

Thought CAI was at the right speed for him or her.

Were not afraid that he or she would not understand the material.

Did not feel alone or lonely while taking CAI.

Did not find themselves just trying to get through the material rather than trying to learn while taking CAI.

Did not guess at the answers while taking CAI.

Did not work harder running the terminal than in understanding the material in CAI.

Did not think learning was too mechanical with CAI.

Did not find it hard to think about the material while on the terminal.

Did not think CAI a waste of time.

Did not feel frustrated by the terminal.

Did not feel that interesting material would be made boring by the computer.

Did not think CAI was impersonal.

Did not find CAI boring.

Did not feel that the curriculum was irrelevant.

Did not think typing training was needed to perform easily.

Five of the items received basically neutral scores and therefore were not included in the above list.

Responses to question 31, "What do you like most about CAI?", were summarized as follows:

"Being at home and relaxed."

"I work at my own speed."

"When it gets harder it gets more interesting."

"It works like a typewriter."

"Computer."

"Working at my own speed, and working alone."

"I understand it much better than the workbook."

"The work."

"It made me think about the work that I am doing."

"You learn fast."

"I learn very fast."

"Because I learn quickly."

"I like working with computers and the way it remembers my name during my course."

"Easily understood. Comparable to having a teacher present except for asking questions. Work schedule easier to accommodate."

"I feel that I accomplish more work with CAI than with books."

Responses to question 32, "What do you dislike most about CAI?", were summarized as follows:

"Nothing."

"Nothing, I don't have enough time to spend with it."

"Nothing."

"Reading."

"Nothing."

"Nothing."

"None."

"I don't dislike anything about it."

"Nothing."

"I don't dislike anything."

"The way the letters are written out on the screen."

"No one to ask questions of."

Responses to question 33, "What suggestions would you have to improve computer assisted instruction in adult education?" are listed below.

"Find out what a person has learned before they even started the program then start them off right there."

"Nothing."

"Wish I could come during the day to work CAI because I would have more time than at night."

"None."

"None."

"Improve the way the computer writes everything on the screen."

"None."

"Sometimes they repeat themselves too much."

"None."

The group's attitude towards CAI, through responses on the "Revised Brown Scale", can be summarized as follows;

1. They were not awed by the computer or its terminals.
2. They did not think CAI impersonal, boring, or a waste of time.
3. They found computer assisted instruction individualized,

effective, better than other instructional methods, flexible, interesting, satisfying, and fun.

Objective 4 Field testing of the homebased computer assisted instruction delivery system developed in the first objective.

Evaluation Plan and Assessment of Objective 4 As stated under Objective 3, Objective 4 was to be evaluated by comparing the performances of the adult education students enrolled in the homebased component of the project with regular adult education students in Lafayette Parish and in the State. The performances on pre-post administrations of the California Achievement Test was the basis for comparison. Equal or greater performance by the homebased students in the project constituted successful accomplishment of Objective 4. Especially for Objective 4, homebased participants will be asked to share their CAI experiences as they might reflect on more general use of CAI in home sites. The homebased component was considered a feasibility study to gain initial experiences with the use of CAI in home sites of adult education students. For that reason it was difficult to predetermine precise evaluation procedures. A special questionnaire was to be administered to the homebased participants. The questionnaire will attempt to determine the affective disposition of the students toward CAI and also solicit suggestions for implementing CAI with adult education students in a

homebased context.

Assessment of Objective 4

The homebased component of the CAI project was modified from the planned procedures presented in the proposal. Circumstances beyond the control of the project staff affected the amount of time that could be dedicated to CAI in home sites. Approximately four months of homebased CAI services was to be rendered to selected participants. Four terminals were to be rented for six months, thus allowing time for initial "setting up and closing" activities.

The circumstances which affected the planned procedures ranged from late funding notification to relocation of the computer facilities in the Title I lab due to a school plant construction project. No deviations in plans were caused by the lessee who delivered the extra Phase III equipment prior to the Christmas holiday break in December, 1982. The Phase III equipment used an additional telephone installation which required central State approval which was not anticipated during the preparation of the proposal. Hence, late approval delayed the installation of the phone line and modem to February, 1983.

Another difficulty occurred when it was determined that the Bell System modem was incompatible with the CCC equipment. Southern Educational Media personnel immediately proceeded to make available a CCC modem at no additional cost. This modem was "lost" in transit and another modem was secured and placed in operation on March 1, 1983.

By this time the end of the school year was rapidly approaching. Instead of recruiting students who had never been enrolled in adult education or CAI classes a decision was made by the project staff to pursue the immediate placement of terminals in home sites enrolling adult students who may have been familiar with the CAI program. This was done in order to maximize the use of homebased terminals in the short time which remained for project operations. The first terminal was placed in a home on March 7, 1983.

After experiencing the establishment of one home site the staff planned for the installation of the remaining three terminals. At least one home phone was not compatible with the acoustical coupler and a compatible phone (style) was made available by South Central Bell officials at no additional cost. Also, at least one small table was provided to a participant who lacked an appropriate desk or table for the terminal and equipment. Within two weeks two more terminals were placed in home sites. Some of the homebased participants had either participated in prior year CAI projects, or were currently enrolled in the Phase III class and wished to participate in the homebased component.

The four terminals were placed in six different homes. One terminal was virtually not used by the adult student, although she seemed enthusiastic about enrolling. This terminal was relocated to another home site and was not counted in the total of six homes. In another home site the student was diligently

pursuing CAI via the homebased terminal but became ill and was forced to discontinue participation. This terminal was counted in the six homes but was relocated to another home.

Some of the final relocations came after the regular adult education program was closed for the year. Two students were willing to enroll in the homebased component even if just for a few weeks since they could continue their adult education program. This continued until June 7, 1983, when CAI equipment had to be relocated from the Title I lab and the phone line needed to be relocated (and disconnected), thus in effect bringing the CAI homebased component to a close.

Most of the terminals were placed in the homes of older adult education students. All of the these students were females. One young male student attempted to enroll in the homebased component but unreconciled telephone technical difficulties prevented his participation.

Active participants diligently worked through the CAI curriculum. During a period of approximately two months the average computer time was 27 hours and 36 minutes. One student worked as much as 67 hours and 2 minutes. The minimum time was 12 hours and 53 minutes which was logged in a period of approximately two weeks close to the end of the homebased component. The total CAI time in each curriculum area is summarized below.

Curriculum	Time
AAS	12 hours, 26 minutes
ARS	7 hours, 58 minutes
ALS 1	4 hours, 29 minutes
ALS 2	1 hour, 23 minutes
GED	1 hour, 20 minutes

Pre-post testing was not feasible for the students who participated exclusively in the homebased program. Virtually, only one student was exclusively enrolled in the homebased component and pre-post test scores were not available for that student due to the limited time available during the homebased component.

The curriculum coordinator was responsible for supporting instruction for the homebased program. He was available for tutoring students by telephone. He also monitored student progress via the computer management capability of the mainframe computer. The coordinator initiated telephone contact with students and followed-up with home site visits for instructional or equipment operation difficulties. Students were also invited to attend the regular class sessions for tutoring purposes, although few if any of the students actually came in for tutoring.

The Revised Brown Scale responses by homebased students were included among the class responses. However, three items were added to the scale for students who participated in the homebased component. These students responded to items 34, 35 and 36.

Their responses follow.

For item 34: "How has having CAI in your home been helpful to you?"

"I can work at my own convenience. I feel no pressure."

"It is more convenient to work at home. Because I do not have to leave from home."

"Very helpful."

"By having CAI in my home it has helped me understand what I was reading instead of a book."

"Work at my convenience and at my pace."

Item number 35: "What problems have you had with CAI in your home?"

"Time sharing with wrong partner. Worry over responsibility of computer."

"None."

"None."

"None."

"None."

Item number 36: "Please make any comment that may help improve CAI in the home."

"More frequent progress reports or scheduled conferences with teacher."

"I wish it could have stayed in my home longer."

"It was very helpful to have CAI in our home to advance me more for the time not being at school."

"None."

"Continue the good work."

V. ANCILLARY FACTORS RELATED TO THE OVERALL SUCCESS OF THE PROJECT

Certain activities occurred during the course of the three phases of the project which are not directly revealed in the evaluation of the objectives. These are the staff activities which indirectly affected the quality of the services rendered by the staff.

During the three-year period the director and curriculum coordinator prepared presentations which were made to state and national adult education personnel. One presentation was made at an Adult Basic Education Conference ad one was made at a LAPCAE Convention. The director also attended the National Educational Computing Conference on an annual basis.

VI. PROBLEM AREAS

Although the objectives were accomplished (except for limitations during Phase III), improvement in one area could produce substantial differences. Many adult education programs have experienced attendance problems and the CAI project was, again as in prior Phases, no exception. This seems to be a continuing problem in adult education programs. Homebased CAI can help in minimizing this problem.

Although CAI was not possible on very few occasions due to technical difficulties this inconvenience was very minor and probably should be identified as a strong component of the program rather than a problem area. Therefore, equipment failure has been relatively insignificant.

In the homebased component the terminals and related home site equipment were somewhat large and participants needed

sufficient space and, or, appropriate furniture for operating the equipment. This could be a more serious problem if the home site was a small apartment. A more serious potential problem is the availability of telephone models which will fit the respective acoustical couplers. A telephone style such as a "Princess Phone" was not compatible with the modems available to the project. A way of dealing with this problem is to acquire "loaner" phones which would fit the modems.

VII. CONCLUSIONS AND RECOMMENDATIONS

This section is dedicated to generalizations about the success of the project (all phases) and recommendations. The conclusions are organized in a manner which corresponds with the objectives. General recommendations will be presented after the conclusions.

Conclusions

Objective 1 addressed the development of a homebased CAI delivery system for use with adults. During all phases of the project, CAI developmental work for use with undereducated adults was studied with a class of adult students. Experience with the software (ABE and GED curriculum from the Computer Curriculum Corporation) produced results in terms of academic growth which compared favorably or exceeded that of non-CAI groups in Lafayette Parish and the State. The computer system which accommodates this software was readily usable by adult education students both in a class environment and in a homebased context.

Objective 2 called for the development of a curriculum guide

which would correlate the CAI curriculum to normally available adult education materials. A curriculum guide was revised and expanded and was prepared as an instructors handbook. The guide correlates the CAI curriculum to commonly available adult education materials in Louisiana's Adult Education Program. The guide can be used in either a class setting or in a homebased context.

Objective 3 was concerned with the determination of the effectiveness of computer assisted instruction in a normal adult education context. It was found that adults continue to work satisfactorily at the CAI terminals and that many were motivated by the learning format. The data shows that students in CAI experienced academic growth which generally equaled or exceeded those of selected reference groups. Readers are again cautioned about the absence of statistical tests for significance due to certain project limitations. In addition, adult students had very positive attitudes towards CAI. At this time it seems safe to conclude that CAI with undereducated adults, coupled with normal adult education materials and instruction, is an effective learning format especially with the assistance of an adult education teacher. However, it must be kept in mind that some adults may not be attracted to this learning format and that CAI is not a panacea for all undereducated adults.

Objective 4 was to determine the effectiveness of the homebased computer assisted instruction system developed in Objective 1 by means of field testing.

A modest field testing of homebased CAI was conducted with four to six students over a period of eight to ten weeks. Only one or two students were enrolled for the entire period. Only limited conclusions can be drawn from this experience. The effort required in placing terminals (and related equipment) in individual homes warrants a commitment to several months of CAI. Homebased students were enthusiastic about the ability to work virtually any time of the day or night every day. However, the need for telephone linkage to the mainframe complicated the use of homebased CAI. As was carefully pointed out in the assessment of Objective 4 it seemed unreasonable to draw any conclusions about the academic effectiveness of homebased CAI. There is evidence that students will successfully participate in attempts at providing CAI in their respective homes.

Recommendations

The study initiated in this project should be continued. CAI has been in use in an increasing number of adult education programs (largely experimentally). This special experimental demonstration approach to the implementation of CAI with these adults (and extended to home sites) is vital and should be continued.

The accelerated development of microcomputers may provide an alternative to the substantial logistical problems involved in placing remote terminals of a mainframe computer in home sites. For this reason an effort should be made to study the potential of microcomputers in adult education in both a class and

homebased context.

There is no need at this time for altering or changing the curriculum used in the project. The CCC curriculum seemed effective for use with adult education students and any other study should consider the use of CCC materials with microcomputers. The curriculum guide developed as an instructor's handbook should be used in conjunction with the computer assisted instruction.

APPENDIX A

SCALE MEASURING ATTITUDES TOWARD CAI

(REVISED BROWN SCALE)

Directions: Please circle the feeling which most closely matches your feeling toward computer-assisted instruction (CAI).

1. While taking computer-assisted instruction (CAI), I feel I want to do my best work.

   Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree

2. I am afraid that I may not be understanding the material while taking CAI.

   Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree

3. I am not worried when I miss a question during CAI because no one is watching me.

   Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree

4. While taking CAI I feel alone and lonely.

   Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree

5. I feel unsure about how well I am doing compared to other students taking CAI.

   Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree

6. I find myself just trying to get through the material rather than trying to learn while taking CAI.

   Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree

7. While taking CAI I know whether my answer is correct or not before I am told.

   Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree

8. I guess at the answers to questions while taking CAI.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

9. When I am trying to learn something it is important to me to know how I am doing compared to other students taking CAI.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

10. As a result of having studied something with CAI, I want to find out more about the subject.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

11. I work harder running the terminal than in understanding the materials in CAI.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

12. I feel I can work at my own speed while taking CAI.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

13. The learning seems too mechanical with CAI.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

14. I feel as though I have a private tutor with CAI.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

15. With CAI I know that the material was chosen especially for me.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

16. I find it hard to think about the material because of the terminal.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

17. CAI is a waste of the student's time.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

18. There have been mechanical problems while taking CAI.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

19. CAI makes it possible for me to learn quickly.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

20. I feel frustrated by the terminal.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

21. CAI is not flexible.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

22. Even interesting material would be boring when presented with CAI.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

23. With all the work I put into it, I am satisfied with what I learned in CAI.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

24. I would say that CAI is better than other kinds of instruction.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

25. With a course like this, I would prefer CAI to other kinds of instruction.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

26. I do not like CAI because it is not personal enough.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

27. CAI is boring.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

28. CAI is not the right speed for me.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

29. Questions are asked with CAI which I feel have nothing to do with the material.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

30. Typing training is needed in order to perform easily in CAI.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

31. What do you like most about CAI?

---

32. What do you dislike most about CAI?

---

33. What suggestions would you have to improve computer assisted instruction in adult education?

---

34. How has having CAI in your home been helpful to you?

---

35. What problems have you had with CAI in your home?

---

36. Please make any comments that may help improve CAI in the home.

APPENDIX B

CURRICULUM GUIDE FOR COMPUTER ASSISTED ADULT EDUCATION

Prepared by the

Homebased Computer Assisted
Adult Education Project
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Compiled by

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The University of Southwestern Louisiana
Lafayette, Louisiana
September, 1983

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CURRICULUM GUIDE FOR
COMPUTER ASSISTED ADULT EDUCATION

Purpose

The handbook correlates some of the available ABE and GED instructional materials for the Louisiana Adult Education Program with the Computer Curriculum Corporation's (CCC) Adult Skills Courses and GED Curriculum. It is partial revision of the Curriculum Guide for Computer Assisted Adult Education handbook compiled and prepared as part of the 1981-82 project. The Curriculum Guide was used as an in-class and as a homebased instrument of correlation of materials in the 1982-83 program.

Computer Curriculum Corporation's Program

Instructional Management. The CCC's Program employs computer assisted instruction (CAI) with terminals for instruction and a computer printer for copywork. The program also contains a computer management system (CMI) which prepares automated reports on classes and (or) individuals. These reports are readily available and can be displayed on the terminal screen or typed on the printer for record keeping. The reports enabled members of the project staff to correlate materials for any student in the project.

The Adult Skills Courses. The CCC's Program consists of the three basic skills courses listed below.

ARS - Adult Reading Skills

ALS I,II - Adult Language Skills

AAS - Adult Arithmetic Skills

These courses were developed to meet the educational needs of adults who need to develop basic reading, language, and arithmetic skills. Each course can be used alone or with ABE materials as preparatory courses for the GED curriculum. Each course is self contained and organized into a sequence of exercises within one skill area. The exercises are arranged in order of increasing difficulty. The structure of the program takes into account differences between the abilities of different students and a single student's varying abilities in different subskills of the same subject. Student record sheets are available for each of the three skills courses from the project office or CCC.

ARS. The Adult Reading Skills course provides drill and courses from the project office or CCC. practice in skills equivalent to those expected of students who have successfully completed elementary school. Students who complete ARS should be ready to enter GED Literature, GED Natural Science, and GED Social Science courses.

Although written on an elementary level, the subject matter is oriented towards young adults. Portions of the curriculum introduce vocabulary required for consumer education.

ARS has five strands or skill areas. They are:

A. Word attack (suffixes, prefixes, root words, compounds, contradictions)

B. Vocabulary (vocabulary study, homonyms, synonyms, antonyms)

C. Literal comprehension (categories, transformations, questions and answers)

D. Interpretive comprehension (fact and opinion, primary inference, character study, analogies, slanted writing, metaphor, simile)

E. Work-study skills (alphabetizing, guide words and letters, finding information)

In creating a lesson in the ARS course, as well as the other skills courses, the program usually selects exercises from the different strands in random order. Randomization keeps the exercises varied and interesting, and it promotes long-term retention of knowledge.

Movement through a strand depends on the number of correct responses in that strand within the lesson. A student may move forwards or backwards in a strand. Criteria for fast forward motion are built into the course(s) and are active at all times. Lesson length may be varied but is normally set at 10 minutes.

Progress reports on individual students or entire classes can be produced and printed as often as needed. Below is a sample of an ARS report.

ADULT READING SKILLS REPORT

ID	SES	TIME	TO	LST	COR	A	B	C	D	E	AVG
	LAVERNE DAWSON										
- 966	5	0:50	1	31	28	15	17	18	14	28	18
	JIM FERGUSON										
*2061	9	1:32	0	11	10	53	47	48	52	85	56

ID	The student's ID number.
SES	Number of sessions the student has taken in this course.
TIME	Cumulative time spent working in this course.
TO	Number of time-outs during the last session. A time-out occurs when a student does not complete an item within the set time limit.
LST	Number of items presented in the last session.
COR	Number of items answered correctly in the last session.
A-E	The percentage of the course completed in each of the five strands.
AVG	The average percentage of the course completed.
-	The student signed on for a lesson on the day of the report.
*	The student stopped the last lesson ahead of time.
TP	The student has completed work in this strand.

A student "tops-out" of the ARS course (and also the A.L.S. I,II courses) when movement through each strand is completed.

ALSI and ALSII. The Adult Language Skills courses are basic language arts courses for adults. ALS I covers language skills comparable to those taught in elementary grades. ALS II progresses to more complex materials, also at the elementary level. The content of both courses is oriented toward topics of interest to adults. The courses concentrate on standard English usage, but include a strand on the mechanics of capitalization and punctuation.

Each course consists of nine strands. They are:

A. Principal parts of verbs
B. Verb usage
C. Subject-verb agreement
D. Pronoun usage
E. Contractions, possessives, and negatives
F. Modifiers
G. Sentence structure
H. Mechanics
I. Topics (short lessons on topics covered in other strands)

As in the ARS course, students working in the ALS curriculum receive a mixture of all strands during every session and their position in a particular strand is determined by their performance in that strand alone.

Below is a sample of an ALS I Progress Report.

ADULT LANGUAGE SKILLS I REPORT

ID	SES	TIME	TO	LST	COR	A	B	C	D	E	F	G	H	T	AVG
	LAVERNE DAWSON														
+996	19	3:04	1	19	14	20	25	15	21	21	--	--	26	24	22
	CARMEN RODRIGUEZ														
• 968	77	12:45	1	27	19	43	42	47	39	65	30	31	47	36	42

ID	The student's ID number.
SES	Number of sessions the student has taken in this course.
TIME	Cumulative time spent working in this course.
TO	Number of time-outs during the last session. A time-out occurs when a student does not complete an item within the set time limit.
LST	Number of items presented in the last session.
COR	Number of items answered correctly in the last session.
A-T	The percentage of each strand that the student has completed.
AVG	The average percentage completed in the course.
+	The student signed on for a lesson on the day of the report.
•	The student stopped the last lesson ahead of time.
TP	The student has completed the work in this strand.

AAS. The Adult Arithmetic Skills course builds proficiency in the basic computational skills that adults need for both practical and educational purposes. The course is designed to diagnose the weaknesses and strengths in the student's arithmetic background, initiate instruction at the individual's level of achievement, and move the student to the mastery of the basic computational skills.

The AAS Course consists of the following eight strands.

addition

subtraction

multiplication

division

equations

fractions

measurement

decimals

Placement in a given strand is independent of placement in all other strands. Movement through a single strand depends only on performance in that strand.

A lesson consists of a mixture of strands. During a lesson, the program presents exercises drawn at random from all the strands at the students's level.

Students can take lessons in fixed drill as well as in the regular mixed drill mode. In mixed drill, students see exercises drawn from all the strands at their level; in fixed drill, they see exercises from one strand only.

Below are samples of AAS reports.

ADULT ARITHMETIC SKILLS REPORT

ID	SES	TIME	TO	LST	COR	ADD	SUB	MUL	DIV	EQN	FRA	MEA	DEC	AVG
	YVONNE ZUCHOWSKI													
-496	26	4:09	0	36	32	18	17	17	14	15	16	16		16.1
*	ROLAND REID													
-572	21	3:27	0	47	43	21	21	19	20	23	18	20		20.3

ID	The student's ID number.
SES	Number of sessions the student has taken in this course, including sessions on fixed strands.
TIME	Cumulative time spent working in this course, not including time spent on fixed strands.
TO	Number of time-outs during the last session. A time-out occurs when the student does not complete an exercise within the time limit.
LST	Number of exercises presented in the last session.
COR	Number of exercises answered correctly in the last session.
ADD-DEC	The level the student has reached in each strand (1-36).
AVG	The student's average level.
-	The student signed on for a lesson on the day of the report.
*	The student stopped the last lesson ahead of time.
TP	The student has completed work in this strand.

ADULT ARITHMETIC SKILLS FIXED STRANDS REPORT

ID	SES	TIME	TO	LST	COR	FIXED	MIXED	AVG
	ROLAND REID							
-572	22	3:27	0	40	37	FRA 19	18	20.3

ID	The student's ID number.
SES	Number of sessions the student has taken in this course.
TIME	Cumulative time spent working in mixed drill.
TO	Number of time-outs during the last session.
LST	Number of exercises presented in the last session.
COR	Number of exercises answered correctly in the last session.
FIXED	Strand and level reached in the last fixed drill session.
MIXED	Level in the strand in mixed drill.
AVG	The student's average level in mixed drill
-	The student signed on for a lesson on the day of the report.

A student "tops-out" of the AAS course when each strand is completed.

The Adult Skills Class Report

Reports on members in each of the skill areas can be printed (or displayed on the terminal screen) by individual student reports or by class reports.

The GED Course

Computer Curriculum Corporation has designed a comprehensive curriculum to prepare students who have completed the Adult Skills Courses for the GED (General Educational Development) examination.

There are several forms of the GED examination. Each form is a test battery consisting of the following five tests:

Writing Skills Test
Social Studies Test
Science Test
Reading Skills Test
Mathematics Test

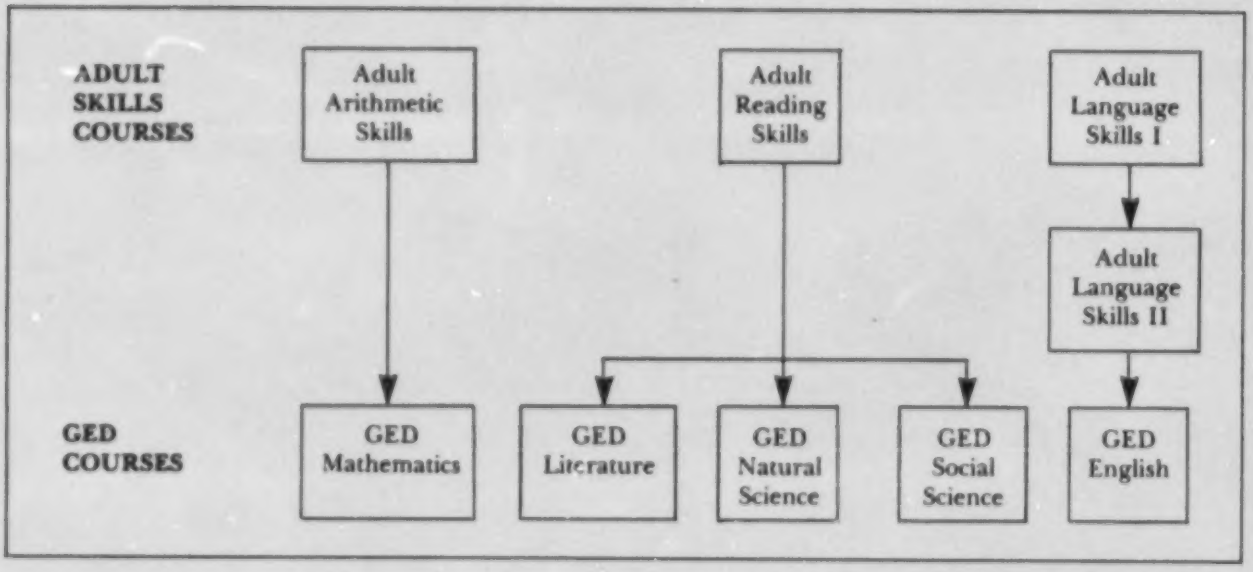
The CCC's GED curriculum contains five sections, one for each test in the GED examination:

GED English
GED Social Science
GED Natural Science
GED Literature
GED Mathematics

Each section is composed of lessons. Each lesson is student-paced and student controlled.

A special lesson on how to take the GED test is included. This builds confidence for the actual GED examination.

Students planning to take the GED curriculum as well as the Adult Skills courses usually should not enter the GED courses until they have finished the corresponding Adult Skills courses as shown below.



Unlike the Adult Skills Courses in which no supplementary material is needed, the GED curriculum requires the **Textbook for the GED Curriculum**, third edition, as a reference source in

working through the curriculum.

A GED lesson usually requires reading from selected passages from the textbook before the student is directed by the computer to begin a lesson.

A lesson consists of a set of questions that refer to the corresponding textbook passage. Questions are not randomized as in the Adult Skills Courses.

Students can move through the GED sections and lessons in any desired order. Student record sheets are available for each GED section to help students keep track of which lessons they have already completed. A student record sheet for the GED program is made available by CCC as part of their materials package.

The program can prepare reports on individuals or on classes at anytime. See the sample report below.

GED REPORT

ID	SES	TIME	TO	LST	COR	LAST	INTRO	PREP	SOC	NAT	LIT	MATH	ENG
	CARMEN TRUJILLO												
+235	24	7:57	0	25	21	SOC	2	0	35	1	11	0	0
	ARNOLD WATERMAN												
+484 .	17	5:14	0	17	13	NAT	2	0	0	24	0	2	14.1

ID	The student's ID number.	LAST	The GED section the student worked in most recently.
SES	Number of sessions the student has taken in the GED Curriculum	INTRO-ENG	The number of the lessons the student last worked on in each of the GED sections.
TIME	Cumulative time spent working in all GED sections.		INTRO-2 lessons NAT-50 lessons PREP-1 lesson LIT-60 lessons SOC-50 lessons MATH-50 lessons ENG-92 lessons, from 1.1 to 24.5
TO	Number of time-outs during the last session. A time-out occurs when a student does not complete an item within the set time limit.	+	The student signed on for a lesson on the day of the report.
LST	Number of questions presented in the last session.	.	The student stopped the last lesson ahead of time.
COR	Number of questions answered correctly in the last session.		

Students should be able to pass a particular GED test when

they score 50% or higher on a majority of lessons in the second half of the corresponding course in the GED curriculum. A student who scores 50% or higher on three consecutive lessons in the second half of a section of the curriculum is ready for the GED test. The probability of success on the GED increases with the number of lessons taken and completed with good scores.

Correlation of ABE-CAI.

In the traditional Louisiana Adult Education Programs, students work independently or in small groups through workbooks and other resources under the guidance of Adult Education Instructors in preparation for the GED examination.

The CCC's Skills Courses curriculum and GED curriculum is structured so that a correlation guide between the curriculum and adult education materials is feasible. Using such a guide, the instructors, staff members, or curriculum coordinator can prescribe lessons which correlate to a given CCC lesson or lessons.

ARS and ABE Instructional Material. The Adult Reading Skills program was not intended for use with total non-readers. In order to function successfully in the program, the student must have had prior training in the basic sight words and in phonics skills. For this reason, a review of one of the basic sight word lists (Dolch, Kucera-Francis) is recommended for all students prior to entering the program. Adult Basic Education materials selected to supplement the ARS program range in reading level from second to seventh grades. They have been correlated

as nearly as possible with the level of difficulty of the ARS lessons.

With one exception, the supplemental materials were prepared specifically for use with adult students. The Crosswinds One workbook (Bowmar/Noble Reading Program) was prepared for junior high classrooms, but has been found by the writer to be useful and popular with young adults in ABE small group and prescriptive settings.

As in the other Skills Courses, progress reports on individual students can be obtained at any time, allowing the instructor to prescribe developmentally or for remedial purposes those materials which correlate with the student's progress level (on a percentage basis as provided by the CMI component).

The following reading instruction materials were selected to be correlated with the ARS program.

Steck-Vaughn Co., 1980.

Applying Reading Skills

Can You Top This?

Devilrow

Night Crossing

Steck-Vaughn Co., 1978.

Steck-Vaughn Adult Reading: 1400 - 2800

Steck-Vaughn Co., 1974.

Practice in Reading

Steck-Vaughn Co., 1978.

Spelling Steps

Bowmar-Noble Publishers, Inc., 1979

Bowmar/Noble Reading Program: Crosswinds One

Below are Correlation Tables for ARS and ABE materials:

(1) Steck-Vaughn Adult Reading

(2) Practice in Reading

(3) Crosswinds One

(4) Spelling Steps - Part 3

(5) Applying Reading Skills

STRAND A: WORD ATTACK

%	Skill	(1) 1400	(2)	(1) 1600	(1) 2100	(3)	(4)
0-60	Final Consonant	49-62					
	Compound Words		108,110	13,14			
	Con-tractions			15,16			
	Prefix: un-				3,4		
	Context Clues	-Most lessons teach this skill-					
	Rhyming Words	-Most lessons teach this skill-					
61-90	Con-fractions			15-16			
	Prefixes: un-,dis- in-,pre-				3,5, 12,14		
	Suffixes: -er,-ment, -ful		67,74 95		42,43, 47,48, 53		
91-92	Prefixes: mis-,dis-				21	74	19-22, 31-34
93-100	Prefixes: mis-,dis-, pre-,in-				5,12, 14,21	74	10-13, 19-22, 31-34

STRAND B. VOCABULARY

%	Skill	(2)	(1) 1600	(1) 2100	(3)	(4)
0-60	Names of Months	98-100				
	Names of Days	64,65				
	Inflectional Endings: -s, -ing, -ed, -y, -er	67,74 95	17,18, 26			
	Synonyms/ Antonyms			64-72		
61-90	Vocabulary				8,11,36	
	Synonyms/ Antonyms			64-72	50,85,88 109,115, 120	
91-92	Vocabulary				64,113, 123	
	Homonyms			75-82	57	
93-100	Synonyms/ Antonyms			64-72	50,85, 88,109, 115,120	124,125 128,129 130

STRAND C: LITERAL COMPREHENSION

%	Skill	(2)	(1) 2200	(3)
0-60	Recognition of Specific Detail	Most lessons teach this skill	41-45	
	Sentence Transformation		48-52	
61-90	Recognition of Specific Detail		53-60	7,14,21,28, 35
	Sentence Transformation		61-68	
91-92	Recognition of Specific Detail		69-75	49,56,63, 70,77,84
	Sentence Transformation		76-85	
93-100	Recogniton of Specific Detail			87,90,94, 101,112,119

STRAND D: INTERPRETIVE COMPREHENSION

%	Skill	(5) Can You Top This?	(5) Devilrow	(1) 2300	(1) 2400	(3)	(1) 2800
0-60	Inference: Drawing Conclusions	Stories are followed by brief exercises.					
61-90	Inference: Drawing Conclusions				10-17	72,75, 82,86	
	Inference: Main Idea			2-12		12-16	
	Inference: Cause&Effect				18-31		
91-92	Inference: Drawing Conclusions				32-69	89,93, 104, 107	
	Inference: Cause&Effect					54,58, 61,65	
	Inference: Main Idea			13-25		19,23, 37	
	Fact/Opinion					40,44, 47,51	45-48
	Recognizing Propaganda						34-44

STRAND E: WORD-STUDY SKILLS

%	Skill	(1) 2600	(3) Crosswinds
0-60	Alphabetical Order: Single Letters	3-8	
	Alphabetical Order: Words by First Letter	8,9	
	Locating Information		
61-90	Alphabetical Order: Words by 2nd, 3rd, and Letter	10-11, 16-17	3
91-92	Alphabetical Order: Guide Words	46-56	
	Locating Information: Table of Contents	23-27	20
	Locating Information: Telephone Directory	12-15	28
93-100	Locating Information: Newspapers	35-42	14,45, 56,63
	Locating Information: Dictionaries	60-68	50
	Locating Information: Multiple Sources	70-76	45,52,55

ALS and ABE Language Instructional Materials. The nine strands in the Adult Language Skills courses were listed earlier in this guide. Each ALS session begins with a brief lesson from Strand T, Topics, presenting concepts examples, and exercises on particular topics. Topic lessons are followed by exercises selected at random from Strands A through H.

Because Strand T is not randomized, it is easily correlated with adult education instructional materials. By determining from the Adult Language Skills teacher's report the student's percentage of completion of Strand T, the instructor can prescribe ABE materials which match the student's current level in the ALS curriculum.

The ALS I teacher's report for Laverne Dawson (see p. 5) indicates that she has completed 24 percent of the Topic Strand (Strand T). From the Correlation Tables for AlS I , the teacher will note that the student is nearing completion of Level 1 (0-30%). He will prescribe completion of any unfinished work on the indicated pages of Language Exercises Tan, Red, or Blue books. He may wish to administer a test or review constructed from the worktext materials. He will note that the student will soon be going into Level 2 of ALS I, requiring a new prescription based on the Correlation Tables.

The following language instruction materials were selected to be correlated with the ALS program.

Steck-Vaughn Company, 1978.

Language Exercises

Tan Book

Red Book

Blue Book

Gold Book

Steck-Vaughn Company, 1979.

Action English Series

Actions = Verbs and Adverbs

Names in Action = Nouns, Pronouns, Adjectives

Sentences in Action = Punctuation and Sentence Structure

Steck-Vaughn Company, 1978.

Language in Daily Living

Book 1 = Verbs and Subjects

Book 2 = Phrases, Clauses, and Verbals

Book 3 = Pronouns, Modifiers, and Verbals

Book 4 = Punctuation and Capitalization

Below are Correlation Tables for Adult Language Skills I, II and Adult Basic Education materials:

(1) Language Exercises

(2) Action English Series

(3) Language in Daily Living

Adult Language Skills I
Strand T - Topics
Level 1: 0-30%

Topics in Sequence	(1) Tan Book	(1) Red Book	(1) Blue Book
Mechanics	5,9,10,17, 49,50		
Principal Parts of Verbs	81,82	23,25,74	14,15,40
Contractions, Possessives, Negatives	43	61-64	
Subject Verb Agreement	85	34,35	

Adult Language Skills I
Strand T - Topics
Level 2: 31-70%

Topics in Sequence	(1) Tan	(1) Red	(1)Blue	(2)Actions
Pronoun Usage		70,71	60,61	
Subject-Verb Agreement		26	6-8	
Contractions, Possessives, Negatives	30-32	65	55	82-84
Modifiers	73	18,19		

Adult Language Skills I
Strand T - Topics
Level 3: 71-100%

Topics in Sequence	(1) Tan	(1) Red	(1) Blue	(2) Actions	(2) Names
Mechanics	7,8,14, 15,25, 54,55	3-13	3,4,9-12		
Subject-Verb Agreement			117-119	15-19	
Contractions, Possessives, Negatives	28,44, 45	61-63	49-51, 56		25-30
Pronoun Usage	67,74				47-50, 53-58
Modifiers	75	76,79-82	88-95, 98-101	71-81	69-76
Verb Usage	89-90	77,78	111,112	65-70	

Adult Language Skills II
Strand T - Topics
Level 1: 0-20%

Topics in Sequence	(1) Red	(1) Blue	(1) Gold
Mechanics	3-6,11,13, 20	3-5,11,13, 52-54	3-6,10,42
Subject Verb Agreement	34,35	6,7	
Contractions, Possessives, Negatives	61-65	49-51	61-63

Adult Language Skills II
Strand T - Topics
Level 2: 21-32%

Topics in Sequence	(1) Red	(1) Blue	(1) Gold
Contractions, Possessives, Negatives		55,56	28,29
Mechanics	7,89-92	9,120-123	116-117
Pronoun Usage	70-71	60-61	
Subject Verb Agreement	26	8	14

Adult Language Skills II
Strand T - Topics
Level 3: 33-48%

Topics in Sequence	(1) Red	(1) Blue	(1) Gold	(3) Book 1	(3) Book 2
Subject-Verb Agreement			12-14	54-58	
Principal Parts of Verbs		83	68		
Modifiers	18,76, 79-82	63,88-94,98-101	80-82, 86-90		56,57
Verb Usage	78	112,113	74		

Adult Language Skills II
Strand T - Topics
Level 4: 49-63%

Topics in Sequence	(1) Blue	(1) Gold	(3) Book 1	(3) Book 2	(3) Book 3
Subject-Verb Agreement	117,118		56-58		
Sentence Structure	22,23	41		27-29	
Verb Usage	112,113	74	28-37		
Mechanics	11,12	10,11			72-74
Principal Parts of Verbs	14-16, 37-41, 76-87	15-22, 67-75			

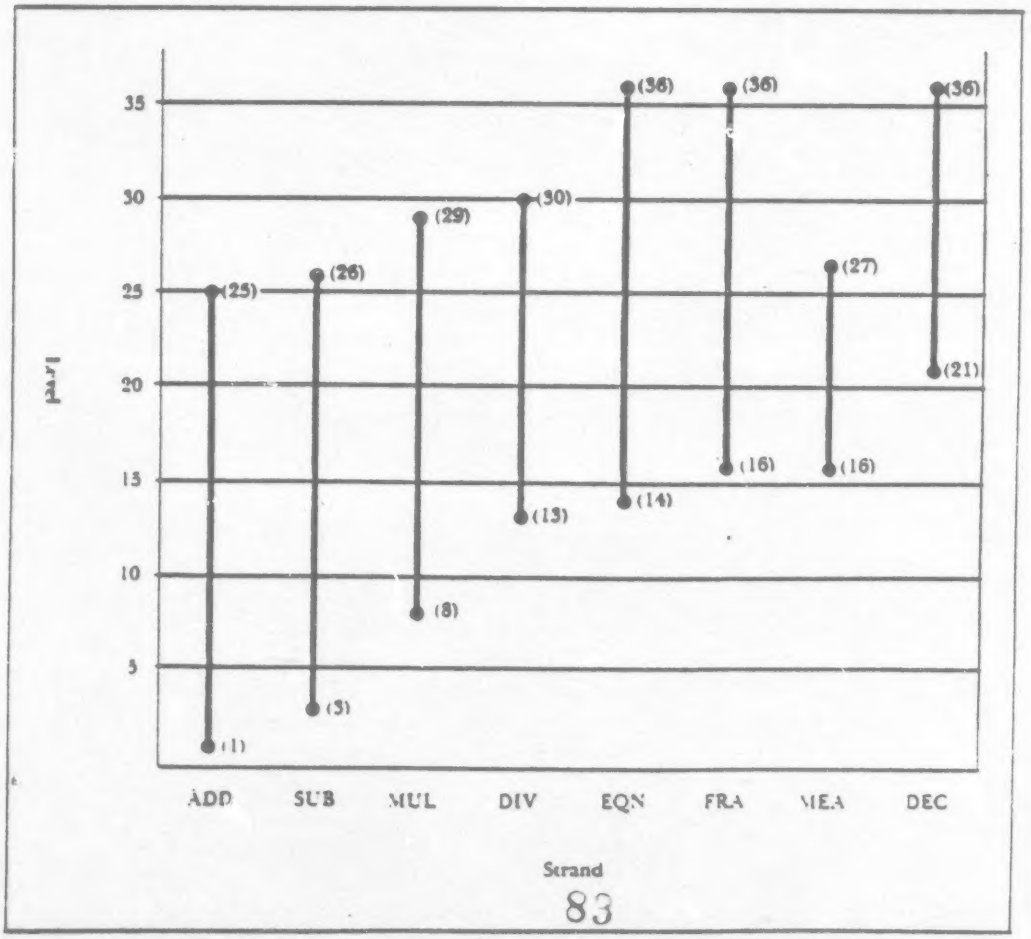
Adult Language Skills II
Strand T - Topics
Level 5: 64-81%

Topics in Sequence	(1) Gold	(3) Book 1	(3) Book 3
Principal Parts of Verbs	15-22,67-75	15-25	
Verb Usage		28-38	
Contractions, Possessives, Negatives			60
Pronoun Usage	78,79		5-13, 16-19
Subject-Verb Agreement	11-14	62-70	
Modifiers	86-88		35-37,56

Adult Language Skills II
Strand T - Topics
Level 6: 82-100%

Topics in Sequence	(3) Book 1	(3) Book 2	(3) Book 3	(4) Book 4
Modifiers			35-43, 46-50	
Verb Usage	28-38, 42-44			
Sentence Structure		27-29		
Mechanics				9-11, 72-78

AAS and ABE Mathematics. There are 36 levels in the AAS course. Each strand starts at different levels (except the fractions and measurement strand) as shown in the figure below.



Each exercise in each strand can be correlated to similar exercises in ABE materials and workbooks. Regularly available adult education materials usually include the following.

Steck-Vaughn Company, 1980.

Working with Numbers:

Line Book

Triangle Book

Rectangle Book

Pentagon Book

Hexagon Book

Heptagon Book

Octagon Book

Refresher Book

Laidlaw Company, 1968

Math 1

Math 2

Cambridge Press, 1980.

Basic Skills with Whole Numbers

Basic Skills with Fractions

Basic Skills with Decimals and Percent

Steck-Vaughn Company, 1978.

Mathematics in Daily Living

Book 1: Fractions

Book 2: Decimals and Percent

Book 3: Measurement and Geometry

Book 4: Fundamental Algebra

Below is a correlation table for AAS and ABE materials:

(1) Working with Numbers Series.

(2) Mathematics in Daily Living Series.

(3) Basic Skills Series.

ADDITION STRAND

Levels	Description	(1) Line	(1) Tri-	(1) Rect-	(1) Pent-	(1) Hex-	(3) Whole
1-4	Two Addends: One or Two Addends	18,36-41,43,45,48	11				13
5-8	Two to Four Addends: One to Three Digits	65,68,71,78	12,16,17				14
9-12	Two Addends: One to Three Digits - Regrouping in in Tens/Hund - Position	136	18,25,26,35,38,52,61				
13-16	Two Addends: One to Three Digits - Regrouping in Ones/Tens Position		67,69,71	4,5			
17-20	Two or Three Addends: Two or Three Digits		75	6-9	6-10,18,19		
21-25	Two to Four Addends: Two to Four Digits			10,11	22-25,37	10-12	15-28

SUBTRACTION STRAND

Levels	Description	(1) Line	(1) Tri-	(1) Rect-	(1) Pent-	(1) Hex-	(3) Whole
3-6	One Digit from One or Two Digits	18,29, 39,52					31
7-10	One or Two Digits from Two Digits	64,78, 82-84, 87,88, 116, 117	13,14				
11-14	One or Two Digits from Two or Three Digits	118	20,22, 25,26, 33,38				32
15-18	Two or Three Digits from Two or Three Digits	133	65,66, 73,76				
19-26	Two to Four Digits from Three or Four Digits			12-17	11-13, 38	13-15	33-48

MULTIPLICATION STRAND

Levels	Description	(1) Tri-	(1) Rect-	(1) Pent-	(1) Hexagon	(3) Whole
9-12	Multiplication Facts	82,91				
13-16	Two Digits by One Digit		18-20			54
17-24	Two to Four Digits by One or Two Digits		27-37, 45-48, 56-60			55-58
25-29	Three or Four Digits by Two Digits		83-87, 90-94	15,16, 30-36, 40-42	16-18	59-70

DIVISION STRAND

Levels	Description	(1) Rect-	(1) Pent-	(1) Hexagon	(2) Fract-	(3) Whole
13-16	Two or Three Digits by One or Two Digits - Remainder of 0	21,22, 23,35, 37,39- 41,48- 52	43,44- 47			80
17-20	Two to Four Digits by One or Two Digits	54,65, 66-82	48			
21-24	Three or Four Digits by One Digit	105-109				82-86
25-28	Three or Four Digits by Two or Three Digits	110-117	49-55, 63-70, 72-75			87-89
29-30	Five or more Digits by Three or Four Digits		76-78	19-24	5,6	90-97

FRACTION STRAND

Levels	Description	(1) Pent-	(1) Hexagon	(1) Hept-	(2) Fract-	(3) Fract-
16-17	Addition and Subtraction with Like Denominators	82-85, 86,87			28-31	26-28
18-19	Addition and Subtraction of Mixed Fractions with Like Denominators	88,89	25,26		32	25-28, 41,42
20-24	Equivalent Fractions and Mixed Fractions	90-100	27			7-24
25-30	Multiplication and Division of Fractions	103	47,48, 56-65			56-90
31-34	Addition and Subtraction of Fractions with Unlike Denominatiors		28-30		43-47	29-31
35-36	Addition and Subtraction of Mixed Fractions with Unlike Denominators			11-14	48-100	32-40, 43-55

DECIMAL STRAND

Levels	Description	(1) Pentagon	(1) Hexagon	(1) Heptagon	(2) Dec-/Percent	(3) Dec-
21-24	Addition and Subtraction	104-112	69,70			16-24
25-28	Changing Fractions to Terminating Decimals		71-72		1-25	8-15
29-32	Multiplication and Division	73-76, 80-84	16,17		45-85	25-45

MEASUREMENT STRAND

Levels	Description	(1) Rectangle	(1) Hexagon	(1) Heptagon	(2) Measurement
16-23	Standard Conversions	96	94-96		1-5
24-27	Metric Conversions	97,98	92,93	15	6-18

Since an AAS progress report on a student can be obtained at anytime, a prescription for each student on available mathematics materials can be made to match present levels in the AAS curriculum. For example, the AAS report for Roland Reid, cited previously, indicated that his average for the course was 20.3 and that his lowest level was 18 in the fractions strand. Using the Prescription Tables, Roland would be prescribed to work pp. 67 to 74 in the WWN Triangle Book, pp. 19 to 65 in the WWN

Rectangle Book, pp. 4 to 14 in the WWN Pentagon Book, or pp. 40 to 42 in the MDL Fractions. (See sample prescription sheet on p. 31)

The GED Course and GED Materials. Specific correlation tables for the GED Course and available GED materials are not prepared in the same manner as that for the ABE materials. Instead, instructors are referred to commonly available GED adult education materials. Experience with the curriculum guide may prove that detailed correlation would enhance the instructional program.

Available GED materials include the following:

Steck-Vaughn Co., 1978.

Preparation for High School Equivalency in:

Book 1: Writing Skills

Book 2: Social Studies

Book 3: Science

Book 4: Reading Skills

Book 5: Mathematics

General Review

McGraw-Hill Paperbooks, 1979.

The Pre-GED Basic Skills Series:

The Social Studies Test

The Science Test

The Basic Reading Skills Test

The Basic Science Skills Test

The Basic Social Studies Skills Test

The Basic Mathematics Test

Cambridge Press, 1977.

The GED Reading Skills Test

The GED Science Test

The GED Social Studies Test

The GED Reading Skills Test

The GED Writing Skills Test

The GED Mathematics Skills Test

SAMPLE

PRESCRIPTION SHEET
CCC/ABE

Student: ___ Roland Reid___
ID Number: __572__

Date	Course	Workbook	Pages
Feb. 3	AAS (20.3)	WWN Pentagon	4-14

Comments: